RoHS Compliant
Directive 2002/95/EC

Gigabit Ethernet
Progressive scan CCD color camera
KP-FD202GV
Specifications (Preliminary) Ver.1.00

1. General

The KP-FD202GV is single CCD type RGB color camera which utilized the progressive scan CCD image sensor with square pixel for SXGA format of 1/1.8-inch which adopted the RGB primal color mosaic filter. By adoption of Gigabit Ethernet interface, high-speed connection of maximum of 1 Gbps can be possible. Moreover, by using hub or switcher, construction of multiple camera system can be easily performed.

2. Outstanding features

(1) High resolution and color fidelity

The 1/1.8-inch 2,010,000 pixels square lattice progressive scan CCD and the RGB primary color mosaic filter achieve a high resolution and high color fidelity of 1620(H) x 1220(V) (UXGA).

(2) Gigabit Ethernet interface

High-speed serial interface Gigabit Ethernet is supported and direct connection is possible to PC by the diameter cable of thin as compared with parallel output. It is possible to 100m.

(3) GigE Vision (Ver. 1.00) correspondence

Based on Industrial camera interface standard GigE Vision, a maximum of 1Gbps high speed data transmit is available and suitable for image processing.

(4) GENiCAM (Ver. 1.00) correspondence

Development of camera control system is easy because industrial camera control API "GENiCAM" lead EMVA (European Machine Vision Association).

(5) PoE correspondence

Power supply can be input via Ethernet cable (Power over Ethernet).

(6) Remote control

- Multi-step electronic shutter (from 1/30 to 1/50000 second in 8 steps)
- Variable shutter (from 10 to 1/100000 second)
- The image capture at desired timing using the external trigger signal
- White balance (ATW, Manual and One-push)
- 6 color independent masking (R, G, B, Cy, Mg, Ye can be independently varied)

and other various functions are set by remote control via a Gigabit Ethernet cable.

SYMBOL	DATE	DESCRIPTION	(DRAWN)	DESIGNED
-	May.31,2008	(first edition)		

MODEL KP-FD202GV	TOLERANCE	Prod. Code - Order No.	
DESIGNED DATE / APPROVED DATE	UNIT	TITLE KP-FD202GV Specifications	REV. 0
CHECKED DATE / STORED DATE	SCALE		
Hitachi Kokusai Electric		DWG. No.	SHEET 1/9

3. Specifications

(1) Imaging device	1/1.8-inch progressive scan interline CCD
Total pixels	1688 (H) x 1248 (V)
Effective pixels	1628 (H) x 1236 (V)
Pixel size	4.4 um (H) x 4.4 um (V) (square lattice)
Color filter	RGB primary color mosaic filter
(2) Scanning area	7.16 mm (H) x 5.44 mm (V)
(3) Scanning system	Progressive
(4) Aspect ratio	4 : 3
(5) Frame rate	18 frames per second (full pixel readout RGB 8bit)
(6) Sync system	Internal / external
(7) Lens mount	C mount
(8) Flange focal distance	17.526 mm
(9) Video output	
Interface	Gigabit Ethernet
Protocol	GigE Vision compliant
Transfer	1 Gbit per second
Image format	RGB 8/10/12bit YUV(4:2:2) 8/10/12bit RAW 8/10/12bit Mono 8/10/12bit
Maximum image size	1620 (H) x 1220 (V)
Frame rate	30 frame per second *Frame rate is different for following format RGB 8bit: 18 frame per second RGB 10bit: 12 frame per second RGB 12bit: 9 frame per second YUV 8bit: 28 frame per second YUV 10bit: 24 frame per second YUV 12bit: 24 frame per second RAW 10bit: 28 frame per second RAW 12bit: 28 frame per second RAW 10bit: 28 frame per second RAW 12bit: 28 frame per second
(10) Sensitivity	2000lx, F5.6, 3200K
(11) Minimum illumination	10 lx (F1.4 GAIN MAX)
(12) Electric shutter	OFF / Auto (AES) / Manual (PRESET or VARIABLE) OFF is normal exposure (frame rate)
PRESET	1/30, 1/60, 1/100, 1/250, 1/1000, 1/2000, 1/10000, 1/50000 second.
VARIABLE	10 to 1/100000 second

(13) External trigger shutter		
	Mode	Fixed shutter
		One trigger
		VD Sync
		Reset control
	Input	Via Gigabit Ethernet cable (Software trigger)
		12-pin connector (Hardware trigger)
	Input level	24Vp-p +/- 1V
	Threshold	3.7V +/- 0.5V (Low --> High)
		3.3V +/- 0.5V (High --> Low)
	Input polarity	High / Low adjustable
	Input delay	Adjustable
(14) External sync signal		
	VD output	5Vp-p +/- 0.3V
	Strobe out	5Vp-p +/- 0.3V
	Output polarity	High / Low adjustable
	Strobe delay	Adjustable
	Strobe duration	Adjustable
(15) Partial scan		Selectable start position and width of picture grabbing in 2H step.
(16) ALC (Auto level control)		Adjustable for video level
(17) White balance		ATW / MANUAL / One-push
(18) Gain		Auto / Manual (0dB to 18db) (Approx. 0.0358dB step)
(19) Gamma		OFF (γ =1) / ON
(20) Color masking		OFF / ON (6 vector independent masking)
(21) Paint black		Adjustable
(22) Sharpness		Adjustable
(23) Black level		Adjustable
(24) Knee		Adjustable
(25) Power supply voltage		DC+12V +/- 1V (input from 12-pin connector)
		48V (PoE)
(26) Current consumption		Approx. 5.0W (DC+12V)
(27) Ambient		
	Performance	0 to +40℃ (+32 to +104 F), less than 90 % RH
	Operation	-10 to +50℃ (+14 to 122 F), less than 90 % RH
	Storage	-20 to +60℃ (-4 to 140 F), less than 70 % RH (without dew condensation)
(28) Vibration endurance		10 to 55 Hz (2.37 to 71.7 m/s^2), sweep: 1 min XYZ 30min
(29) Shock endurance		490.3 m/s^2 (Drop test, once each top, bottom, left and right)
(30) External dimensions		44(W) x 29(H) x 72(D) mm (not including protrusions)
(31) Mass		Approx. 140g

4. Composition

(1) Camera (with IR cut filter)

(2) CD-ROM (Operation manual, Control software and SDK)

(3) Composition table

5. Optional accessories

(1) Dummy glass (AR coated)	ARC1214
(2) IR cut filter	IRC650
(3) Junction box	JU-F30,
(4) Tripod adaptor	TA-M1
(5) 12pin plug	HR10A-10P-12S(01)

(6) Camera cable

	Molded type	Shield type
2 m	C-201KSM	C-201KSS
5 m	C-501KSM	C-501KSS
10 m	C-102KSM	C-102KSS

In the CE Marking region, use the shield type and install clamp filter （ZCAT2035-0930A: TDK） at both ends of the cable.

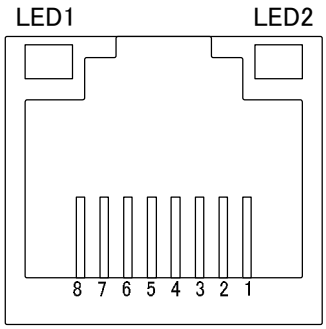
(7) LAN cable (Commercial item) CAT5E Straight cable
CAT5E Cross cable
CAT6 Straight cable
CAT6 Cross cable

6. Specification of Digital output connector

(1) Gigabit Ethernet connector

PIN NO.	Signal
1	TRP1+
2	TPR1-
3	TRP2+
4	TPR3+
5	TRP3-
6	TRP2-
7	TRP4+
8	TRP4-

Connector: RJ-45

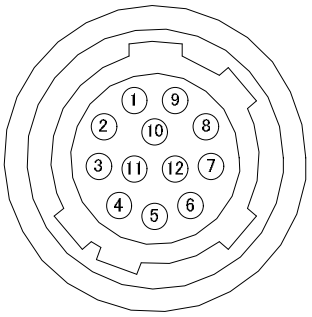


*LED Status

STATUS	LED1(Green)	LED2 (Yellow)
Power ON	Light Off	Light On
Transmission	Blink On	Light On
Transmission pause	Light Off	Light On

(2) 12-pin connector

PIN NO.	Signal	PIN NO.	Signal
1	GND (+12V)	7	TRIG-A / VD (H)
2	+12V	8	TRIG-B (C)
3	GND	9	TRIG-B (H)
4	AUX	10	FLASH / VD OUT
5	GND	11	N.C.
6	N.C.	12	TRIG-A / VD (C)



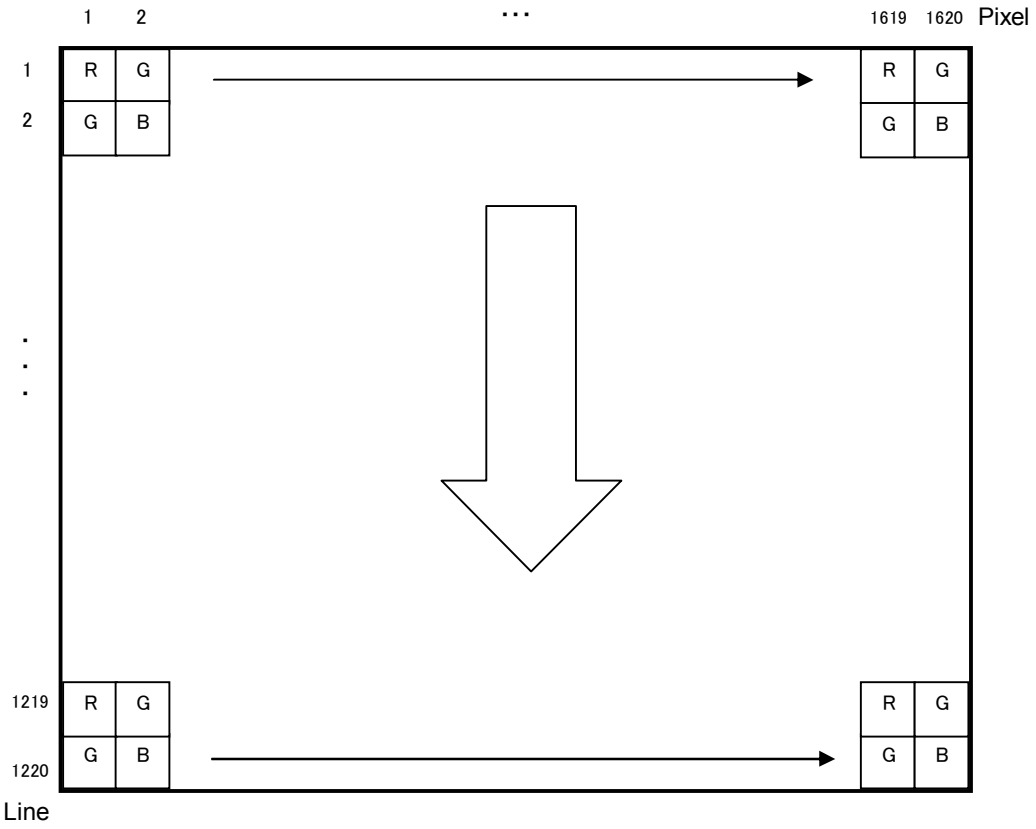
Connector (camera side) : SAMWOO SNH-10-12 (RPCB) or equivalent
Plug (matching cable plug) : Hirose HR10A-10P-12S (01) or equivalent

Please do not unplug and insert cable (camera cable) with a power supplied to a camera. Install clamp filter (ZCAT 2035-0930A: TDK) at both ends (camera and video processor ends) in the CE marking legion.

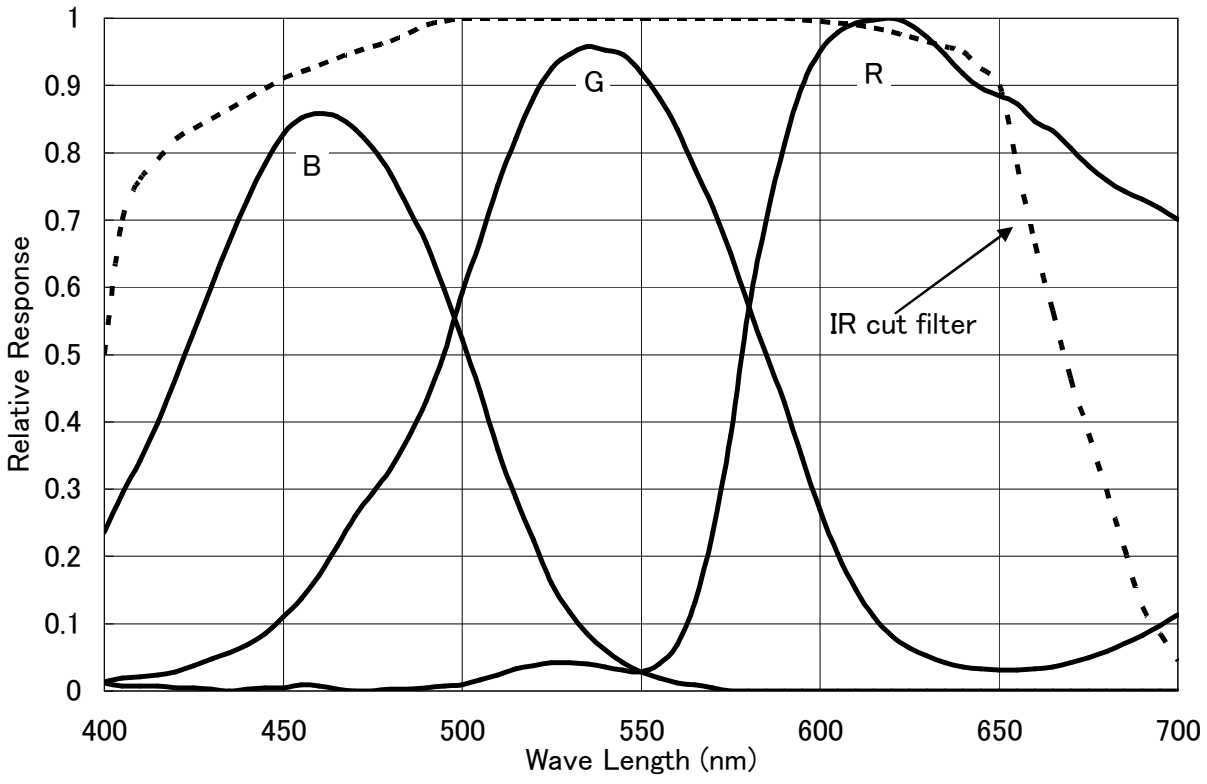
Please do not connect 1 pin and 3/5 pin when using PoE. When connecting it, PoE may stop the power supply. Because TRIG-A/VD and TRIG-B are photo coupler input, 8/12 pin is isolated with 1/3/5 pin. When 8/12 pin is connected to GND, please connect to 3 pin or 5 pin.

Note: Please do not input any signal to N.C. pin because machine may break down.

8. Output sequence when format is RAW



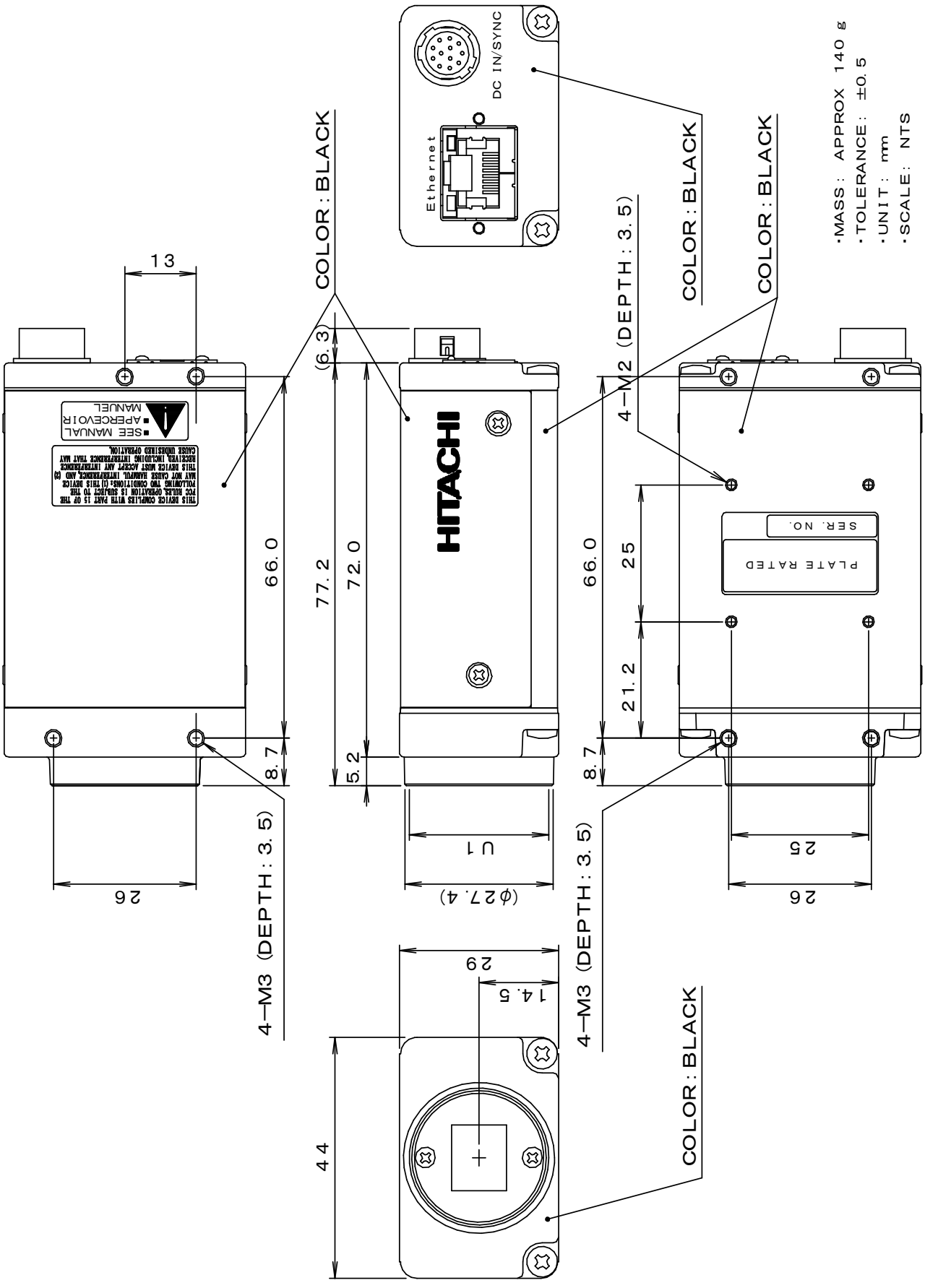
9. Spectral response



DWG. No.

SHEET 6 / 9

10. External view



DWG. No.	SHEET 7/9

Notice:
These specifications are subject to change without prior notice due to product improvement.
Confirm the most recent specifications at time of order.
Hitachi Kokusai certifies this product complies with the standard warranty conditions of Hitachi Kokusai, and that quality control is implemented to the extent required to comply with these conditions.

RoHS Compliant
This product complies with the requirement of the RoHS(Restriction of the use of Certain Hazardous Substances in Electrical and Electronic Equipment) Directive 2002/95/EC

Warranty and service:

(1) The guarantee period is one year after the data purchase.
However, the defects due to erroneous use or intentional act are excluded.
(2) As the defect after expiration of the guarantee period, where product repair is possible, repair will be performed at charge.
(3) The present Warranty pertains only to the camera unit. Secondary malfunctions attributable to camera failure as well as expenses incurred by disassembly and reassembly of the related system, are beyond the scope of this Warranty.
(4) Compensation for loss of business, loss or damage to software, database and other contingent losses are beyond the scope of this Warranty.
(5) Hitachi Kokusai Electric Inc. is not liable for the losses caused when the equipment is used in a system, use for business trades, production process, medical fields, crime prevention applications, etc.
(6) In the case of camera trouble by miss wiring of cable, it will be considered as out of warranty.

Modification history

SIMBLE	DATE	CORRECTION AND REASONS		DESIGNED